

Claims

1. A defect repair method for repairing defects occurring on one and the same component, in particular for repairing quartz defects on alternating phase shift masks, comprising:
 1. performing defect repair method steps substantially based on mechanical processes; and
 2. performing defect repair method steps substantially based on etching processes.
2. The defect repair method according to claim 1, wherein the defect repair method steps that are substantially based on mechanical processes are nanomachining method steps.
3. The defect repair method according to claim 2, wherein the defect repair method steps that are substantially based on etching processes comprise gas injection method steps.
4. The defect repair method according to claim 1, wherein the defect repair method steps that are substantially based on etching processes comprise the step of emitting ion beams.
5. The defect repair method according to claim 4, wherein the defect repair method steps that are substantially based on etching processes include FIB (Focused Ion Beam) method steps.
6. The defect repair method according to claim 5, wherein one and the same defect is repaired with the defect repair method steps that are substantially based on mechanical processes and with the defect repair method steps that are substantially based on etching processes.

7. The defect repair method according to claim 1, wherein at least one of the defects is quartz defects or quartz bumps.
8. The defect repair method according to claim 7, wherein the defect repair method steps that are substantially based on etching processes are first performed, and subsequently thereafter the defect repair method steps that are substantially based on mechanical processes are performed.
9. The defect repair method according to claim 8, wherein during the method steps that are performed first that are substantially based on etching processes, a first defect is not repaired or only partially repaired, or is not to be repaired or only partially to be repaired, respectively, at an edge region.
10. The defect repair method according to claim 9, wherein the first defect is completely left at the edge region during the defect repair method steps that are performed first that are substantially based on etching processes.
11. The defect repair method according to claim 9, wherein at least 20% of the first defect is left at the edge region during the defect repair method steps that are performed first that are substantially based on etching processes.
12. The defect repair method according to claim 9, wherein at least 50% of the first defect is left at the edge region during the defect repair method steps that are performed first that are substantially based on etching processes.
13. The defect repair method according to claim 11, wherein the edge region of the first defect, which had first not been repaired or had been repaired partially only, is, at least partially repaired during the subsequently performed defect repair method steps that are substantially based on mechanical processes.
14. A defective component according to claim 13, wherein at least one defect has been repaired by making use of a defect repair method.

15. The component according to claim 14, wherein the component is a photomask.
16. The component according to claim 15, wherein the component is an alternating phase shift mask.
17. The component according to claim 16, wherein the defect is a quartz defect.
18. The defect repair method according to claim 1, wherein the defect repair method steps that are substantially based on etching processes comprise gas injection method steps.
19. The defect repair method according to claim 1, wherein the defect repair method steps that are substantially based on etching processes comprise the step of emitting ion beams.
20. The defect repair method according to claim 1, wherein the defect repair method steps that are substantially based on etching processes include FIB (Focused Ion Beam) method steps.